TETRA TECH

Lori Kozel
Project Manager

April 28, 2015

Ms. Tricia Edwards
On-Scene Coordinator
U.S. Environmental Protection Agency Region 5
Emergency Response Branch #1
9311 Groh Road
Grosse Ile, MI 48138-1697

Subject: **Abbreviated Sampling and Analysis Plan for the**
St. Lawrence Cemetery Dump Site
Shelby Township, Macomb County, Michigan
EPA Contract No. EP-S5-13-01
EPA Technical Direction Document (TDD) No. S05-0001-1404-002
Document Tracking No.: 0184

Dear Ms. Edwards:

Tetra Tech, Inc. (Tetra Tech) is submitting the following abbreviated sampling and analysis plan (SAP) for the St. Lawrence Cemetery Dump site (site). The objective of the sampling event associated with this SAP is to collect subsurface soil samples from approximately 10 locations that were previously identified, on April 9, 2015, as containing either surface drums or tanks. The analytical results for these samples will determine the presence or absence of Toxicity Characteristic Leaching Procedure (TCLP) metals (including mercury), TCLP volatile organic compounds (VOCs), TCLP semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), Target Analyte List (TAL) metals (including mercury), Target Compound List (TCL) VOCs, and TCL SVOCs in the subsurface soil of the former landfill, and if present, the potential environmental impacts and/or threats to human health posed by these chemicals.

If you have any questions regarding this plan, please call me at 586-524-0613.

Respectfully,

Lori A. Kozel

Lori Kozel
Tetra Tech Project Manager

Enclosure
cc: Kevin Scott, Tetra Tech START Program Manager
TDD file

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ABBREVIATED SAMPLING AND ANALYSIS PLAN
FOR THE ST. LAWRENCE CEMETERY DUMP SITE

TDD#:	S05-0001-1404-002	
EPA OSC:	Tricia Edwards	
SITE NAME:	St. Lawrence Cemetery Dump Site	
SITE LOCATION:	Shelby Township, Macomb County, Michigan	
SAMPLING ACTIVITIES:	Subsurface Soil Sample Collection	
SAMPLING DATES:	April 29, 2015	
SAP PREPARER:	Michael Browning	
SIGNATURE/DATE	Michael J Browning	April 27, 2015
QC REVIEWER:	John Dirgo	
SIGNATURE/DATE:	John Dirgo	April 28, 2015
EPA OSC APPROVAL SIGNATURE/DATE:		
Document Tracking Number (DTN):	0184	

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1. **OBJECTIVE OF SAMPLING:** At the St. Lawrence Cemetery Dump site (Figure 1), Tetra Tech plans to collect subsurface soil samples from 10 locations that were previously identified, on April 9, 2015, as containing surface drums and tanks (Figure 2). The specific locations will be determined while on site based on the ability to access the required areas with excavator and/or powered auger; however, these locations will be as close as possible to the identified drums and tanks as shown on Figure 2.

   In June 2014, Tetra Tech conducted a surface soil investigation. Results from soil samples collected during the site assessment indicated no presence of significant surface soil contamination at the site; however, no soil borings were advanced to possibly identify deeper contamination. The analytical results did not indicate presence of hazardous materials on site, but because of presence of buried drums and other metal items buried on site, a second phase of assessment activities was recommended.

   The objective of the subsurface soil investigation is to determine: (1) the concentrations of TCLP metals (including mercury), TCLP VOCs, TCLP SVOCs, PCBs, TAL metals (including mercury), TCL VOCs, and TCL SVOCs in the landfill soil; and (2) the need for a time-critical removal action regarding the excavation, removal, and disposal of landfill soil.

2. **SAMPLING METHODS:** During this investigation, START team members will complete the following tasks:

   - Collect subsurface soil samples at 10 locations that currently contain surface drums and tanks. Each soil sample will be collected in accordance with Tetra Tech SOP No. 005-2, "Soil

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Sampling" (SOPs are included as an attachment to this Abbreviated Sampling and Analysis Plan).

- Submit the soil samples for laboratory analysis of TCLP metals (including mercury), TCLP VOCs, TCLP SVOCs, PCBs, TAL metals (including mercury), TCL VOCs, and TCL SVOCs.
- Conduct air monitoring using Multi-Rae during all activities. Monitoring will include screening for VOCs, hydrogen sulfide, lower explosive limit, carbon monoxide, and oxygen.
- Conduct the sampling activities over a 1-day period on April 29, 2015.

Subsurface Soil Sampling

After gaining access to and excavating an exploratory pit at each sample location, through the use of a mini-excavator, START will collect one subsurface soil grab sample and any required QA/QC samples at a depth up to 6 feet below ground surface. Mannik Smith Group (MSG) will provide and operate the mini excavator along with a powered auger for areas where access by the excavator is not possible. All extra soils will be placed back into the pit / hole so that no waste is generated.

MSG will excavate down in 2-foot intervals and place soil atop the poly covered surface adjacent to the excavation. Soil will be visually observed and screened with Multi-Rae in accordance Tetra Tech SOP No. 003 "Organic Vapor Monitoring." Soil will be selected for sampling based on staining or other visible evidence of contamination and high screening results.

If necessary, the soil at each subsurface location may need to be loosened with a disposable plastic scoop in order to facilitate the collection of the soil sample. The soil will be placed into a Ziploc bag and homogenized before the sample is transferred into labeled containers except for the TCL VOC sample which will be collected prior to soil being homogenized. The geographic location of each soil sample will be recorded with a GPS device. All soil samples will be analyzed for TCLP metals (including mercury), TCLP VOCs, TCLP SVOCs, PCBs, TAL metals (including mercury), TCL VOCs, and TCL SVOCs.

As a part of the soil collection process, START will weight out 10 grams of soil and put this soil into a 40-milliliter glass vial that contains methanol as a preservative prior to homogenizing the soil. This soil will be analyzed for TCL VOCs. The remaining soil will be homogenized and then placed into glass jars that contain no preservatives.

3. **SAMPLE HANDLING:** Sampling locations will be noted in the site logbook in accordance with Tetra Tech SOP No. 024, "Recording Notes in Field Logbooks." The collected samples will be labeled, packaged, and shipped in accordance with procedures outlined in Worksheets #26 and 27 of the Tetra Tech QAPP and Tetra Tech SOP No. 019, "Packaging and Shipping Samples." The samples will be analyzed by CT Laboratories, LLC, of Baraboo, Wisconsin.

4. **QUALITY ASSURANCE/QUALITY CONTROL**: Field QA/QC measures will include the collection of one duplicate sample for every ten soil samples, and an MS/MSD sample for every twenty soil samples. The Tetra Tech project manager, Ms. Lori Kozel, will be responsible for ensuring that sample quality and integrity are maintained and that sample label and documentation procedures are in accordance with the QAPP.

5. **DECONTAMINATION:** Tetra Tech does not expect to use any sampling equipment that will require decontamination. All investigation-derived waste (IDW), including personal protective equipment, will be bagged and disposed of as dry industrial waste. The excavator / auger will be dry decontaminated between sampling locations, and all gross material will be scraped off using shovels or wire brushes.

REFERENCES

Tetra Tech. 2009. "Organic Vapor Monitoring." SOP No. 003, Revision No. 3. July.

Tetra Tech. 2014a. "Packaging and Shipping Samples." SOP No. 019. Revision No. 7. December.

Tetra Tech. 2014b. "Quality Assurance Project Plan. (QAPP)" Prepared for U.S. Environmental Protection Agency (EPA) under Contract No. EP-S5-13-01. April.

Tetra Tech. 2014c. "Recording of Notes in Field Logbooks." SOP No. 024. Revision No. 2. December.

TABLE 1: SAMPLE SUMMARY

Matrix	Parameter	Number of Investigative Samples	Number of Quality Control (QC) Samples[a]				Number of Investigative and QC Samples
			Field Duplicate	MS/MSD	Equipment Blank	Trip Blank	
Soil	TCLP Metals	10	1	1	0	0	11
Soil	TCLP Mercury	10	1	1	0	0	11
Soil	TCLP VOCs	10	1	1	0	0	11
Soil	TCLP SVOCs	10	1	1	0	0	11
Soil	PCBs	10	1	1	0	0	11
Soil	TAL Metals	10	1	1	0	0	11
Soil	TAL Mercury	10	1	1	0	0	11
Soil	TCL SVOCs	10	1	1	0	0	11
Soil	TCL VOCs	10	1	1	0	0	11

Note:

a See START QAPP Worksheet #20 for QC sample requirements.
MS Matrix spike
MSD Matrix spike duplicate
PCBs Polychlorinated biphenyls
SVOCs Semivolatile organic compounds
TAL Target Analyte List
TCL Target Compound List
TCLP Toxicity Characteristic Leaching Procedure
VOC Volatile organic compound

TABLE 2: ANALYTICAL METHODS

Matrix	Parameter	Concentration Level[a]	Analytical Method	Volumes and Containers	Preservation	Holding Time[b]
Soil	TCL VOC	Low	SW-846 5035 and 8260B	5 grams of soil in Two 40mL screw top septum-sealed glass vial	10 mL of methanol, store at Cool to 4 °C ± 2 °C	NA / 14 days
Soil	TCL SVOC	Low	SW-846 8270D	One 8-oz glass jar with polyethylene-lined cap	Cool to 4 °C ± 2 °C immediately after collection	14 days / 40 days
Soil	TAL Metals (including mercury)	ICP-MS, CVAA	SW-846 6020/7471B	One 8-oz glass jar with polyethylene-lined cap	Cool to 4 °C ± 2 °C immediately after collection	180 days for all metals (28 days for mercury)
Soil	TCLP VOC	Low	SW-846 1311, 8260B	One 8-oz glass jar with polyethylene-lined cap	Cool to 4 °C ± 2 °C immediately after collection	14 days / 14 days
Soil	TCLP SVOC	Low	SW-846 1311, 8270D	One 8-oz glass jar with polyethylene-lined cap	Cool to 4 °C ± 2 °C immediately after collection	14 days / 7 days / 14 days
Soil	TCLP Metals (including mercury)	ICP-AES, CVAA	SW-846 1311, 6010, 7470A	One 8-oz glass jar with polyethylene-lined cap	Cool to 4 °C ± 2 °C immediately after collection	180 days / 180 days
Soil	PCBs	NA	SW-846 8082	One 8-oz glass jar with polyethylene-lined cap	Cool to 4 °C ± 2 °C immediately after collection	14 days / 40 days

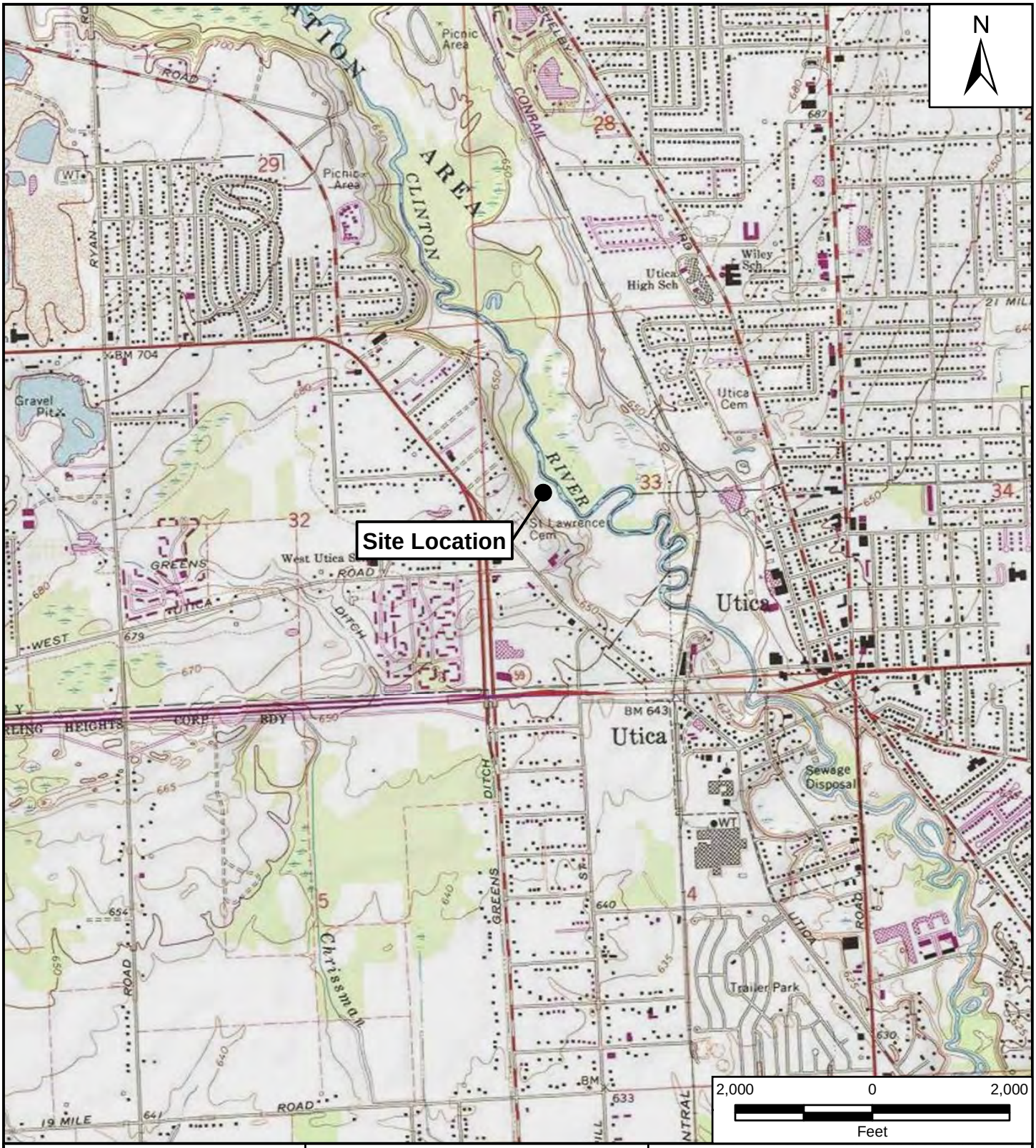
Notes:
a See START QAPP Worksheet #15 for reporting limits
b Holding time is measured from the time of sample collection to the time of sample extraction and analysis
PCBs Polychlorinated biphenyls
SVOCs Semivolatile organic compounds
TAL Target Analyte List
TCL Target Compound List
TCLP Toxicity Characteristic Leaching Procedure
VOC Volatile organic compound

TABLE 3: TETRA TECH SOP LIST

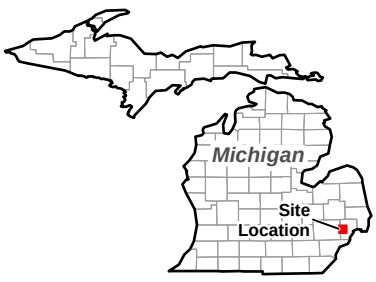
Reference Number	SOP Title (and Revision Date or Number)	Originating Organization	Equipment Type	Modified for Project Work? (Y/N)	Comments
SOP 003	Organic Vapor Monitoring (2009)	Tetra Tech	Multi-Rae, calibration gases	N	
SOP 005-2	Soil Sampling (2009)	Tetra Tech	Bottle ware, Multi-Rae, plastic scoops, Ziploc bags, nitrile gloves	N	
SOP 019-7	Packaging and Shipping Samples (November 2014)	Tetra Tech	Chains-of-custody, bubble wrap, Ziploc bags, packing tape, coolers, custody seals, scissors, pen with permanent ink, labels, ice	N	
SOP 024-2	Recording Notes in Field Logbooks (November 2014)	Tetra Tech	Logbook, pen with permanent ink	N	

Note:
SOP Standard Operating Procedure
Tetra Tech Tetra Tech, Inc.

SITE FIGURES



Reference Map



Source: USGS 7.5-Minute Topographic Quadrangle Map: Shelby, MI 1983

St. Lawrence Cemetery Dump - RS
5981 Auburn Road
Shelby Township, Macomb County, MI

Figure 1
Site Location Map

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Prepared For: EPA	Prepared By: Tetra Tech Inc.

File Path: G:\GIG9026-START IV\Michigan\St. Lawrence Cemetery\mxd\2015-04\Fig1-SiteLocation.mxd

Date Saved: 4/21/2015

EPA Contract No.: EP-S5-13-01 TDD No.: S05-0001-1404-002

Coordinate System: GCS WGS 1984
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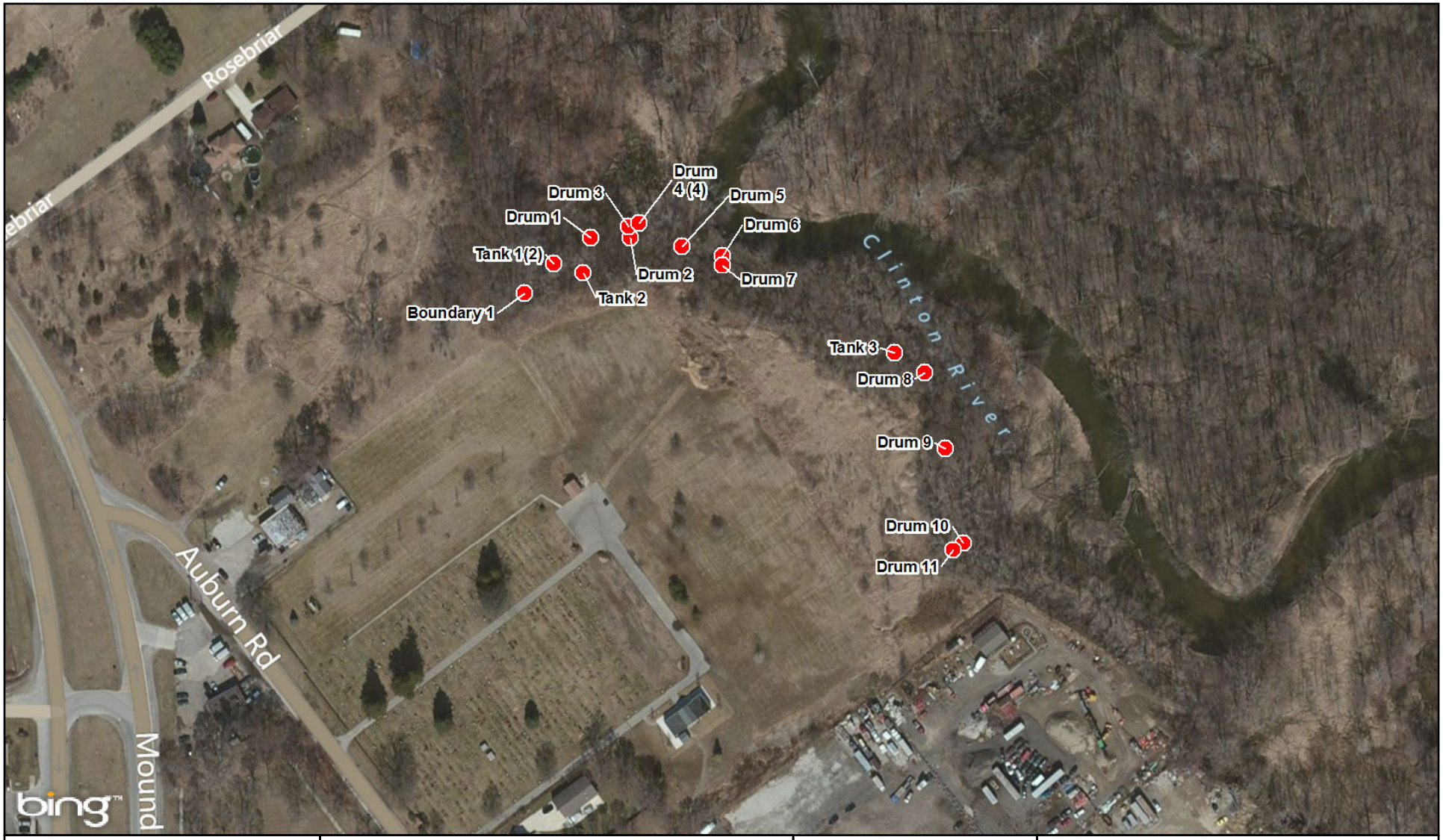
Units: Degree



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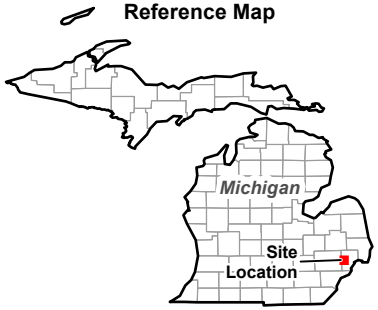

Legend

- GPS Location

Source: Bing Maps Hybrid - 2013

N

100 0 100

Feet

St. Lawrence Cemetery Dump - RS
5981 Auburn Road
Shelby Township, Macomb County, MI

Figure 2
Site Layout Map and GPS Locations

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File Path: G:\G\G9026-START IV\Michigan\St. Lawrence Cemetery\mxd\Fig2-GPSLocations.mxd

Date Saved: 4/21/2015 EPA Contract No.: EP-S5-13-01 TDD No.: S05-0001-1404-002

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